

Instantly Calibrate Gas Flows

with Defender 500 Series Flow Calibrators

- **Quickly and precisely verify flow rates** generated by vacuum or pressure. All models available in both low and high flow range options.
- **Convenient for lab or field**—all units are portable and include rechargeable batteries and quick-connect fittings.
- **Suitable for a wide range of uses**, from setting flow rates for thermal desorption tube sampling to calibrating passive air samplers for canister sampling.
- All units **accurately measure volumetric flow** to 1% of reading. The Defender 530 also allows mass flow measurements of virtually any gas with the proper gas conversion factor.
- **Calibrated in an ISO-17025 facility** with a Scope of Accreditation for gas flow by NVLAP of NIST.



Whether you sample with thermal desorption tubes or air canisters, you can calibrate air sampling pumps quickly and reliably with Defender 500 series flow calibrators. Simply turn the unit on, connect it to your pump, and start measuring. With no preparation required, calibration has never been easier to perform. Choose the model and flow range that is right for your application and get finished faster with Defender flow calibrators.

Restek Recommends: Recalibrate your Defender flow calibrator once every year to maintain lifetime warranty. Prolonged failure to recalibrate your unit may result in increased error. To always get the most accurate measurements, contact Restek® Customer Service to send in your flow calibrator for service, recertification, and recalibration (Defender 510 service: cat.# 26453, Defender 520 service: cat.# 26454, Defender 530 service: cat.# 26455).

Defender Flow Calibrators

Defender 500 Series Specifications

Approximate Time per Reading	1–15 seconds
Reading Styles (user-selectable from 1 to 100 measurements with averaging function)	Single (manual), continuous, or burst
Gas Compatibility	Noncorrosive, noncondensing, less than 70% humidity
Flow Modes	Pressure or suction
Measurement Cell Style	Integrated
AC Adaptor/Charger	12 V DC, >250 mA, 2.5 mm center positive
Battery System	6 V rechargeable, sealed lead-acid; 6–8 hours typical operation
Battery Operational Time (5 cycles/min)	3 hours backlight on, 8 hours backlight off
Pressure and Suction Fittings	1/4" ID hose barb
Warranty	1 year (battery 6 months)
Storage Temperature	0–70 °C
Ambient Humidity	0–70%, noncondensing
Operating Pressure (absolute)	Atmospheric, maximum 15 psig
Display	Backlit graphical LCD
Data Port (for PC interface)	Serial RS-232
Data Cable (for PC interface)	1 m Defender to PC included
Protective Case	Pelican case available
Dimensions (h x w x d)	5.5" x 6" x 3" (140 x 150 x 75 mm)
Weight	29 oz (820 g)
RoHS- and CE-compliant	



Restek offers three Defender models—each is available in both low and high flow range units.

- **Defender 510** Volumetric Primary Flow Standard
- **Defender 520** Enhanced Volumetric Primary Flow Standard with Temperature and Pressure Sensors
- **Defender 530** Standardized and Enhanced Volumetric Primary Flow Standard with Temperature and Pressure Sensors

Description	Low Flow Range	High Flow Range
	(5 mL–500 mL/min) cat.#	(300 mL–30,000 mL/min) cat.#
Defender 510 Flow Calibrator	26440	26441
Defender 520 Flow Calibrator (includes temperature and pressure recordings)	26442	26443
Defender 530 Flow Calibrator (Standardized Accuracy: +/-1.2% of reading)	26444	26445

Accessories for Defender 500 Series Flow Calibrators

Description	qty.	cat.#
Pelican 1200 Case (hard, heavy duty w/custom foam; fits 1 Defender flow calibrator)	ea.	26446
PC Card (provides a serial port for laptop use)	ea.	26448
Serial Cable (RS-232 cable for Defender to PC connection)	ea.	26449
Adaptor/Charger with U.S. Plug (100–240 V, 12 VDC)	ea.	26450-US
Adaptor/Charger with UK Plug (100–240 V, 12 VDC)	ea.	26450-UK
Adaptor/Charger with European Plug (100–240 V, 12 VDC)	ea.	26450-EU
Adaptor/Charger with Australian Plug (100–240 V, 12 VDC)	ea.	26450-AUS
U.S.-Compatible Plug for Adaptor/Charger	ea.	26451-US
UK-Compatible Plug for Adaptor/Charger	ea.	26451-UK
European-Compatible Plug for Adaptor/Charger	ea.	26451-EU
Australian-Compatible Plug for Adaptor/Charger	ea.	26451-AUS
Leak Test Cap, Plastic, Yellow (suction and pressure fittings for self leak test)	10-pk.	26452



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